AGC
THE CONSTRUCTION ASSOCIATION

Hey Construction, Let's Influence Design and Drive Innovation!

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Earn CE hours for this Session

Participants must:

1. Sign in using attendance sheet in the back of the room.
2. Attend at least 95% of the session.
3. Complete the session and post-program evaluation.

Additional instructions will be emailed to attendees requesting CE credits. If requesting AIA credits, please provide your AIA number so we can report your attendance. For questions regarding continuing education credits, please contact **Jo-Anne Torres**, Manager of Professional Development and Continuing Education, at jo-anne.torres@agc.org, or (703) 837-5360.

Earn CE hours for this Session

1.0 AIC CPD Credit | AGC of America has been approved to offer Continuing Professional Development (CPD) credits for qualifying programs by the American Institute of Constructors (AIC).

1.0 AIA Learning Unit (LU) | The Associated General Contractors of America is a registered provider of AIA-approved continuing education under Provider Number G523. All registered AIA CES Providers must comply with the AIA Standards for Continuing Education Programs.

AGC of America is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors. This session is designated for **1.0 CPE credit** in the field of Communications and Marketing.

Learning Objectives

By the end of this session, participants will be able to:

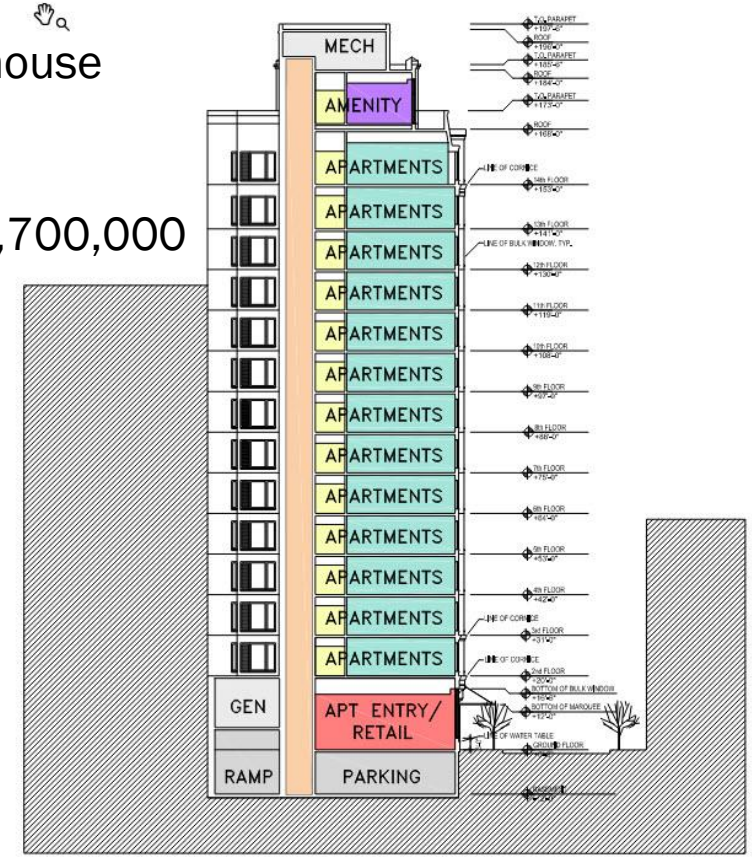
1. Discuss how the relationship and process of the specifier and a conceptual estimator, working alongside the design team and owner, encourages questions, reveals answers, and drives innovation.
2. Demonstrate how organizational FORMATS already in existence will be used in new and innovative ways to revolutionize the way the design and construction industry delivers the written portion of Construction Documents.
3. Recommend comprehensive participation by all parties, resulting in time and cost saving benefits.
4. Implement an open and transparent discussion among the Contractor, Estimator, Owner, Specifier, and Supplier.

Case Study

Urban Apartment Building

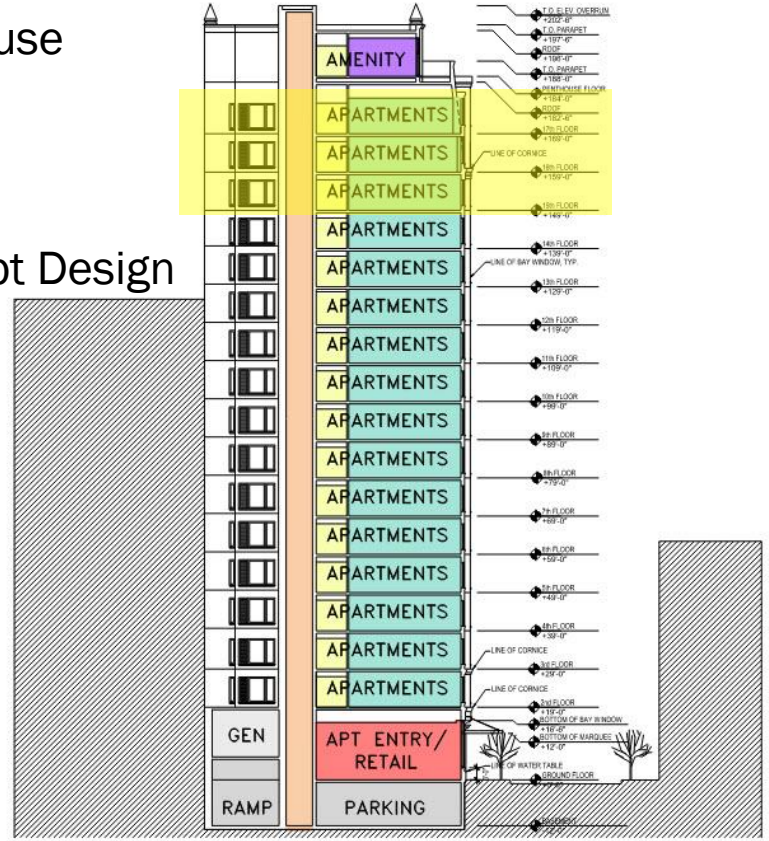
Concept Design

15 Stories plus penthouse
91 Apartments
142,600 GSF
$45,600,000 to $53,700,000
17% budget range

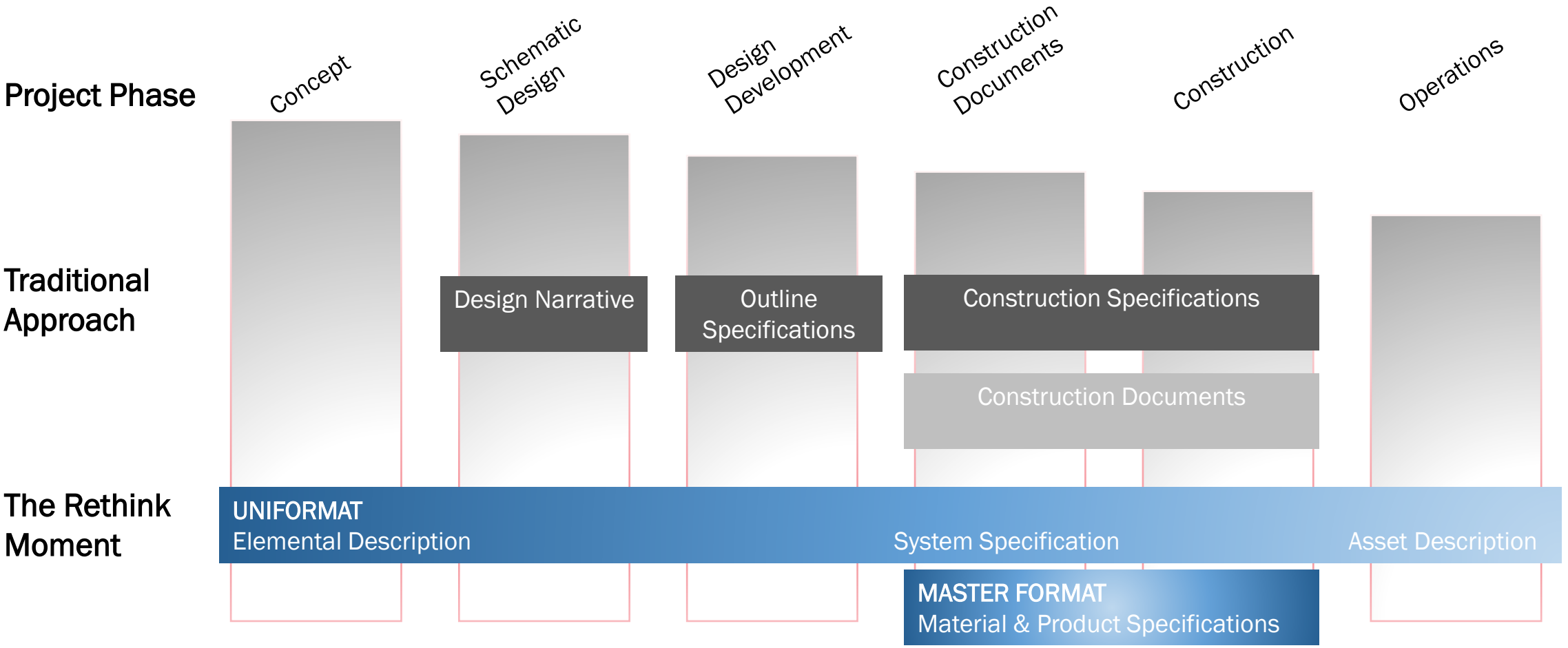


Schematic Design

18 Stories plus penthouse
112 Apartments
169,500 GSF
$55,000,000
Same height as Concept Design



Order of Decisions/Documents



The Rethink Moment

Specification

B	SHELL	
B20	EXTERIOR ENCLOSURE	
B2010	EXTERIOR WALLS	
B2010.A	PODIUM WALLS	
	Description	Drainable EIFS on gypsum sheathing on metal studs
	Performance Requirements	Drainable R19 cavity and R7.5 continuous insulation
	Components	Description
072410	EIFS	Drainable system 2” insulation, WRB adhesive custom color
061600	Sheathing	5/8” glass mat gypsum board
054000	CFMF	6” steel studs, 43 mil think minimum
072100	Blanket Insultation	6” foil faces glass fiber; R21
092900	Interior Skin	5/8” gypsum board
079200	Sealant Joints	Low-modulus silicone; standard colors

LOD

100

200

300

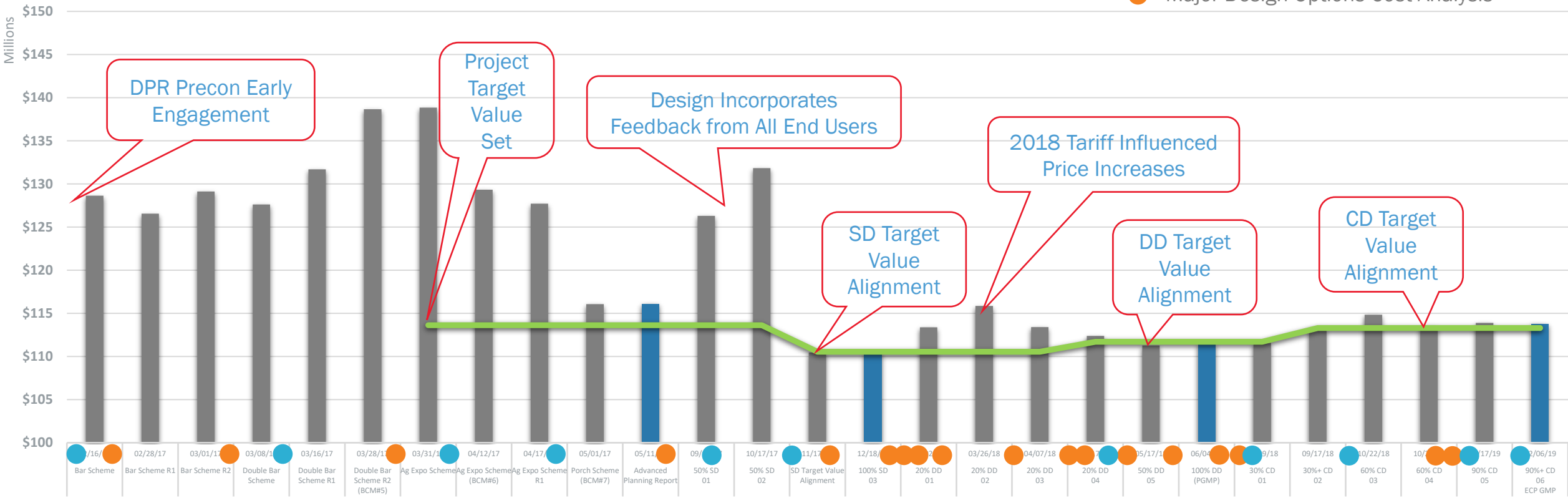
Estimate

Drainable EIFS on gypsum sheathing on steel studs	15,000 SF	40.0	600,000
			600,000
Drainable EIFS on gypsum sheathing on steel studs	15,000 SF	40.0	600,000
Cavity insulation, R19	15,000 SF	1.5	22,500
Continuous exterior insulation, R7.5	15,000 SF	3.00	45,000
			577,500
Drainable EIFS on gypsum sheathing on steel studs	15,000 SF	12.00	180,000
Glass mat EIFS	15,000 SF	3.50	52,500
2” insulation, R7.5	15,000 SF	3.00	45,000
Adhesive membrane	15,000 SF	2.50	37,500
Fluid applied exterior coating			
Custom color	15,000 SF	12.50	187,500
Batt insulation, 6”, R21	15,000 SF	1.75	26,250
Joint sealant	15,000 SF	0.85	12,750
			541,500

Target Value Design

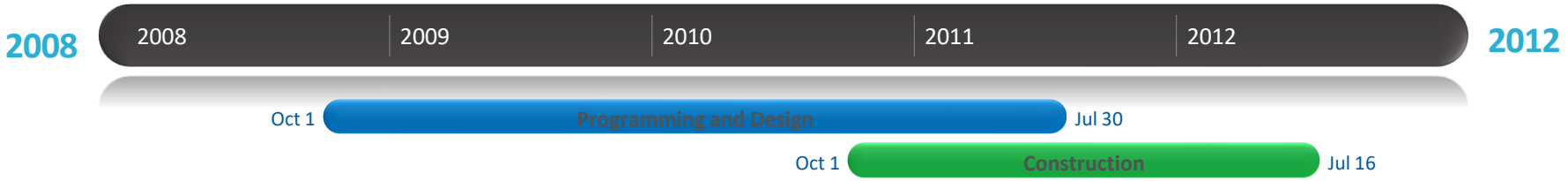
Legend:

- Progress Estimate
- Final Estimate of Design Phase
- Owner Construction Budget
- All-Hands OAC Design / Estimate Review
- Major Design Options Cost Analysis



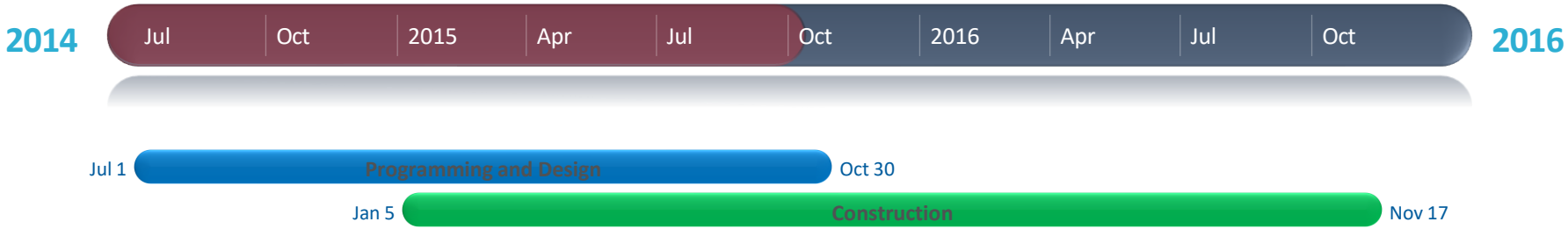
University of Arizona Biosciences Partnership Building

Phoenix, AZ



54 months

CHALLENGE & OPPORTUNITY



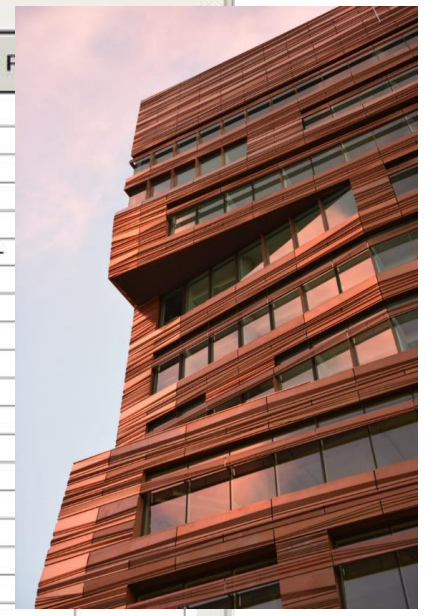
30 months

WORK PACKAGING @ BSPB

LCoM Office Building Demonstration

Area-Loc	Scope	Program	Element	Uniformat 5	Description	Takeoff Quantity	Labor Cost/Unit	Labor Price	Labor Amount	Material P
100					Office Building	######## SF	38.70 /SF		3,900,562	
	200				Shell	100,800.00 SF	8.03 /SF		809,823	
		B1000.9010			Steel Frame Structure	655.00 tn	162.02 /tn		106,124	
			B1010.001		Steel Frame	lb	/lb		18,144	
				A1010.10.1	Continuous Footings	cy	/cy			
					Continuous Footings	60.00 cy	-	-	-	-
				A1010.30.1	Spread Footings	cy	/cy		18,144	
				A1020.80.1	Grade Beams	cy	/cy			
				A4010.10.1	Slab On Grade	sf	/sf			
				A6010.20.1	Perimeter Sub Slab Drainage					
				B1010.10.5	Structural Steel	655.00 tn	/tn			
				B1010.10.5	Slab on Metal Deck	sf	/sf			
				B1010.20.4	Metal Decking	sf	/sf			
				B1010.20.9	Equipment Pads	sf	/sf			
				B1010.90.5	Fireproofing	sf	/sf			
				B1020.20.3	Lightweight Insulating Fill	sf	/sf			
				B1090.10.1	Miscellaneous Steel	sf	/sf			
			B1010.005		Stairs	ea	/ea			
			D1010.010		Elevator Core: Office	ea	/ea			
			D2000.005		Plumbing Shell	sf	/sf		63,180	
			D4000.005		Fire Protection Shell	sf	/sf			70,381
			Z1050.021		Project Requirements Shell	mo	/mo			
					Balconies	2,450.00 sf	/sf			
			B1100.010		Balconies	sf	/sf			
			B2090.0100		Exterior Skin Specialties	sf	/sf			
					Exterior Skin System: Metal Panel /	67,500.00 sf	10.43 /sf			
			B2010.005		Stone Veneer System	6,050.00 sf	/sf			
			B2010.011		Metal Panel System	27,600.00 sf	/sf			
			B2020.005		Sliding Window Wall System	800.00 sf	863.78 /sf			
			B2020.010		Curtainwall	12,000.00 sf	/sf			
			B2050.005		Exterior Entry Doors	2.00 ea	/ea			
			B2050.011		Exterior Door Assemblies	20.00 ea	633.60 /ea			
			B2050.0886		Exterior Storefront	21,050.00 sf	/sf			
			B2090.0100		Exterior Skin Specialties	67,500.00 sf	/sf			
		B3010.0100			Built Up Roofing	24,850.00 sf	/sf			
			B3010.015		Built Up Roofing: Steel Frame Office	24,850.00 sf	/sf			

MF L1 Div/MF L2 Gr/MF L2 Spec/MF L3 Type | Area-Loc/Scope/Program/Element/Uniformat5

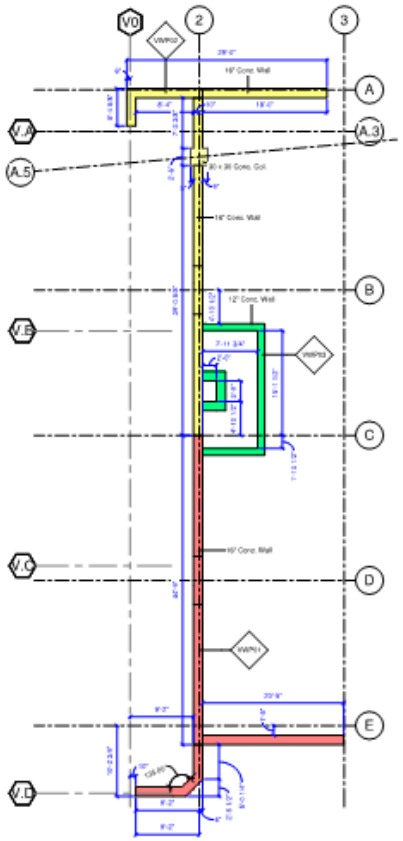


Define Locations & Refresh Models

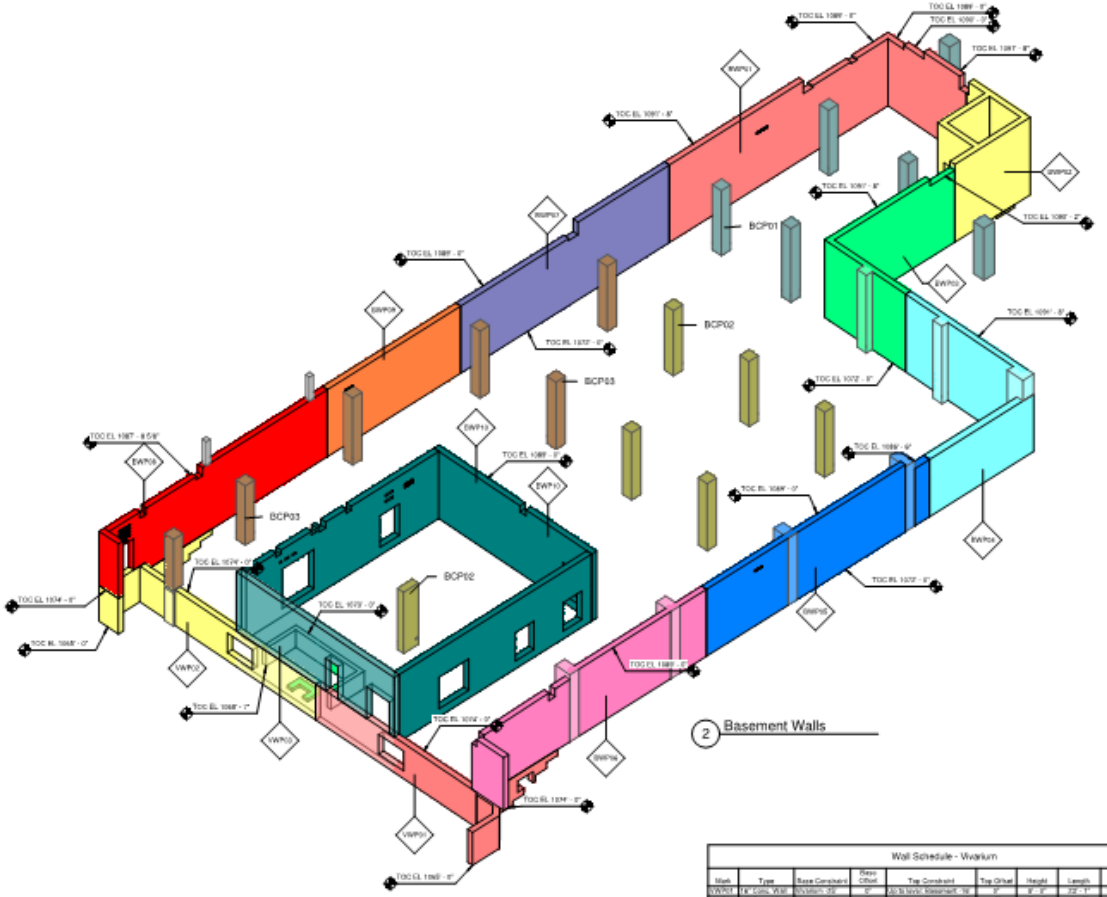
Model Register

	Elevation	Cut	View Depth
Project	1020'-1 7/8"	4'	0'
Unnamed (4)	1020'-1 7/8"	4'	0'
Unnamed (1)	1020'-1 7/8"	4'	0'
Unnamed (2)	1020'-1 7/8"	4'	0'
BPB_Level 11	1237'	4'	0'
BPB_Level 10	1222'-6"	4'	0'
BPB_Level 9	1208'	4'	0'
BPB_Level 8	1193'-6"	4'	0'
BPB_Level 7	1179'	4'	0'
BPB_Level 6	1164'-6"	4'	0'
BPB_Level 5	1150'	4'	0'
BPB_Level 4	1135'-6"	4'	0'
BPB_Level 3	1121'	4'	0'
BPB_Level 2	1105'	4'	0'
BPB_Level 1	1088'-6"	4'	0'
BPB_Basement	1072'-6"	4'	0'
BPB _Vivarium	1063'-6"	4'	0'
BPR_Below Vivarium	1020'-1 7/8"	4'	0'
Unnamed	4'-9 9/16"	4'	0'

WORK PACKAGE: BASEMENT WALLS



1 Vivarium Walls



2 Basement Walls

GMP RECONCILIATION

Pricing Updated	Description	iGMP1 SUBMITTAL Qty	UM	Based on 10/28/2014 Drawings Total Cost	iGMP2 SUBMITTAL Qty	UM	Based on 2/2 Drwgs w/ CCB01 Overlay for precedence of iGMP1 Scope Total Cost	Qty Change FROM BUDGET TO iGMP2	Cost Change FROM BUDGET TO iGMP2
2/27/2015	**BASEMENT**								
2/27/2015	CAISSONS	1,825	LF	$ 710,227	1,845	LF	$ 718,297	20	$8,070
2/27/2015	CONTINOUS FOOTINGS	374	CY	$ 66,703	200	CY	$ 48,277	(174)	($18,426)
2/27/2015	GRADE BEAMS	319	CY	$ 64,316	552	CY	$ 115,400	233	$51,085
2/27/2015	ELEVATOR PIT MATS	35	CY	$ 8,416	25	CY	$ 7,747	(10)	($669)
2/27/2015	VIVARIUM MAT FND: 46" THICK	-	CY	$ -	150	CY	$ 32,533	150	$32,533
2/27/2015	LOWER VIVARIUM/BASEMENT WALLS	10,636	SF	$ 262,889	11,010	SF	$ 278,239	374	$15,350
2/27/2015	CORE / ELEVATOR WALLS	4,506	SF	$ 186,728	3,700	SF	$ 194,243	(806)	$7,515
2/27/2015	BASEMENT COLUMNS	125	CY	$ 55,882	127	CY	$ 57,854	2	$1,973

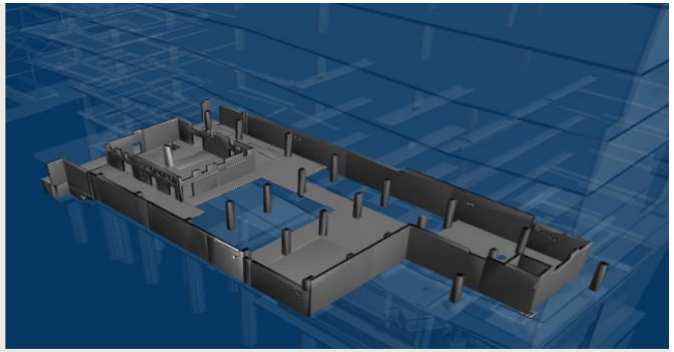
Bid	Description	Bid Quan	Unit	Unit Cost	TTL $	Manhours	CYDS
21	CAISSONS	1,825.000	LNFT	$477.48	$871,399	2,350	3,900
22	CONTINOUS FOOTINGS	374.000	CY	$238.73	$89,286	610	374
23	GRADE BEAMS	319.000	CY	$269.88	$86,091	846	319
24	ELEVATOR PIT MATS	35.000	CY	$321.88	$11,266	94	35
31	BASEMENT WALLS	10,636.000	SF	$33.10	$352,077	3,094	700
32	CORE / ELEVATOR WALLS	4,506.000	SF	$55.49	$250,047	2,206	292
41	BASEMENT COLUMNS	125.000	CY	$598.77	$74,846	480	125
51	VIVARIUM LEVEL SOG	780.000	SF	$35.15	$27,418	154	16
52	BASEMENT LEVEL WASTE SLAB	16,808.000	SF	$7.06	$118,640	305	226
100	LEVEL ONE						
101	BASEMENT SOG	16,808.000	SF	$7.17	$120,586	798	454
102	SHORED SLAB	19,087.000	SF	$31.19	$595,417	5,479	771
103	CORE WALLS	3,406.000	SF	$28.51	$97,108	1,002	170
104	LEVEL ONE CONTINOUS FOOTINGS	64.000	CY	$483.78	$30,962	346	64
105	SHEAR WALLS	16,223.000	SF	$37.10	$601,912	4,900	663
106	COLUMNS	125.000	CY	$605.05	$75,631	494	125
107	SOG 12" Loading Dock 4' AFF	2,934.000	SF	$10.58	$31,030	227	120
108	30" Walls	2,723.000	SF	$37.18	$101,243	906	279
110	4" Built up Slab	1,954.000	SF	$32.24	$63,007	493	78
111	Loading Dock Walls	494.000	SF	$36.67	$18,113	203	20
112	West Ext Slab over Vivarium	1,093.000	SF	$26.99	$29,497	254	90
200	LEVEL TWO						
202	SHORED SLAB	19,586.000	SF	$20.48	$401,113	4,124	856
203	36" x 72" Beam at Loading Dock	354.000	SF	$43.34	$15,343	137	40
204	CORE WALLS	3,146.000	SF	$28.44	$89,460	892	156
206	COLUMNS	86.000	CY	$694.31	$59,710	464	86
208	SOMD	2,168.000	SF	$6.05	$13,108	93	39
300	LEVEL THREE						
302	SHORED SLAB	21,811.000	SF	$27.00	$588,843	6,512	866
304	CORE WALLS	3,146.000	SF	$28.44	$89,460	892	156
306	COLUMNS	86.000	CY	$694.31	$59,710	464	83
400	LEVEL FOUR						
402	SHORED SLAB	20,531.000	SF	$19.60	$402,342	3,785	813
404	CORE WALLS	3,146.000	SF	$28.44	$89,460	892	156

	Name	Target Quantity	Unit	Production rate	Degree of comp	Begin time	End point	Duration	MAN HOURS
3	WALLS				27.20%	3/24/2015	2/10/2016	302	2415.8
4	BWP01	2013.76	SF	465.9	100.00%	3/24/2015	3/30/2015	4.3	34.6
5	BWP02	2193.33	SF	438.6	100.00%	3/27/2015	4/3/2015	5	40
6	BWP03	1754.68	SF	412.7	100.00%	3/31/2015	4/6/2015	4.3	34
7	BWP04	1740.45	SF	316.4	100.00%	4/3/2015	4/10/2015	5.5	44
8	BWP05	1764.12	SF	320.7	100.00%	4/7/2015	4/14/2015	5.5	44
9	BWP06	1981.45	SF	428.3	100.00%	4/15/2015	4/21/2015	4.6	37
10	BWP07	1713.59	SF	548.2	100.00%	4/13/2015	4/16/2015	3.1	25
11	BWP08	1598.47	SF	206.2	100.00%	4/15/2015	4/24/2015	7.8	62
12	BWP09	1073.44	SF	260.1	100.00%	5/7/2015	5/13/2015	4.1	33
13	BWP10	4514.94	SF	440.4	100.00%	5/5/2015	5/19/2015	10.3	82
14	VWP01	1163.89	SF	265.8	100.00%	3/25/2015	3/31/2015	4.4	35
15	VWP02	1108.41	SF	316.6	100.00%	4/1/2015	4/6/2015	3.5	28
16	VWP03	743.71	SF	191.7	100.00%	4/8/2015	4/13/2015	3.9	31
17	L1-ECW	519	SF	75.5	100.00%	6/17/2015	6/25/2015	6.9	55
18	L1-ESW	152.27	SF	25.3	100.00%	6/4/2015	6/12/2015	6	48.1
19	L1-WCW	2691.92	SF	537.9	55.80%	6/23/2015	7/7/2015	5.4	43
53	SLAB ON GRADE				52.10%	5/4/2015	9/24/2015	136.9	1095
54	SOG 1	760.91	SF	8	38.90%	5/11/2015	9/24/2015	95.1	760.9
55	*AHU PAD				100.00%	5/4/2015	5/11/2015	-5.4	43
56	SOG 2A	244.1	SF	8	91.80%	5/22/2015	7/7/2015	30.5	244.1
57	SOG 2B	0	SF	1	100.00%	6/1/2015	6/1/2015	1	8
58	SOG L1	2023.33	SF	415	0.00%	3/16/2015	3/22/2015	4.9	39
59	COLUMNS				6.40%	4/7/2015	2/22/2016	633.8	5118.6
60	BCP 01	6	EA	1.6	100.00%	4/7/2015	4/10/2015	3.8	30
61	BCP 02	7	EA	1.4	100.00%	4/15/2015	4/21/2015	4.9	39
62	BCP 03	5	EA	0.4	100.00%	4/30/2015	5/18/2015	12.6	101
63	L1CP1	19	EA	8	100.00%	6/16/2015	6/18/2015	2.4	19
64	L1CP2	26	EA	6.1	100.00%	6/3/2015	6/15/2015	4.3	34
65	L1CP3	2	EA	0.9	100.00%	6/26/2015	6/30/2015	2.3	18
107	CIP Deck				19.00%	5/26/2015	2/2/2016	235.6	1885.1
131									
132	on on date of report 18.2%								
133	on 11.1%								
134	mpletion -7.2%								
135	re are only those tied to schedule								
136									

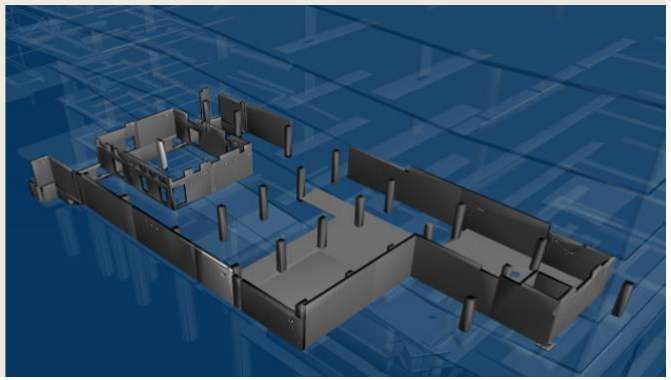
Actual Quantity	Unit	Production rate	Degr
1\0\1900	SF	435.4	
1\0\1900	SF	365.6	
1\0\1900	SF	311.9	
1\0\1900	SF	309.4	
1\0\1900	SF	352.8	
1\0\1900	SF	352.3	
1\0\1900	SF	285.6	
1\0\1900	SF	319.7	
1\0\1900	SF	57.6	
1\0\1900	SF	424.9	
1\0\1900	SF	65.5	
1\0\1900	SF	17.9	
0	SF	0.2	
1\0\1900	EA	0.4	

Predicted Begin time	End point	Duration	MAN HOURS	Difference Production rate
3/24/2015	2/24/2016	306	2362	
3/24/2015	3/30/2015	5	40	-30.5
3/27/2015	4/3/2015	6	56	-73
3/31/2015	4/7/2015	6	48	-100.8
4/3/2015	4/14/2015	8	64	-7
4/7/2015	4/15/2015	7	56	32.1
4/16/2015	4/23/2015	6	48	-76.1
4/13/2015	4/17/2015	5	40	-262.6
4/15/2015	4/27/2015	9	72	113.5
6/3/2015	6/5/2015	3	24	-202.5
5/6/2015	5/22/2015	13	104	-15.5
3/25/2015	3/31/2015	4.4	0	
4/1/2015	4/6/2015	3.5	0	
4/8/2015	4/13/2015	3.9	0	37.1
7/1/2015	7/14/2015	7.4	59	-5.1
7/1/2015	7/9/2015	4.4	35	9.5
7/8/2015	7/16/2015	6.4	51	-84.2
5/11/2015	9/29/2015	37.6	309	
5/11/2015	5/27/2015	12	96	57.5
7/1/2015	7/10/2015	-5.4	43	
5/27/2015	6/10/2015	11	88	9.9
6/1/2015	6/5/2015	5	48	-0.8
9/23/2015	9/29/2015	4.3	34	61.1
4/7/2015	3/1/2016	631.9	4864	
4/7/2015	4/10/2015	3.8	0	
4/15/2015	4/21/2015	4.9	0	
4/30/2015	5/20/2015	15	120	0
6/17/2015	7/7/2015	3.8	24	-1.7
6/11/2015	7/9/2015	7.1	40	-0.9
6/26/2015	6/30/2015	2.3	0	-0.2
6/3/2015	2/12/2016	262.2	1321	

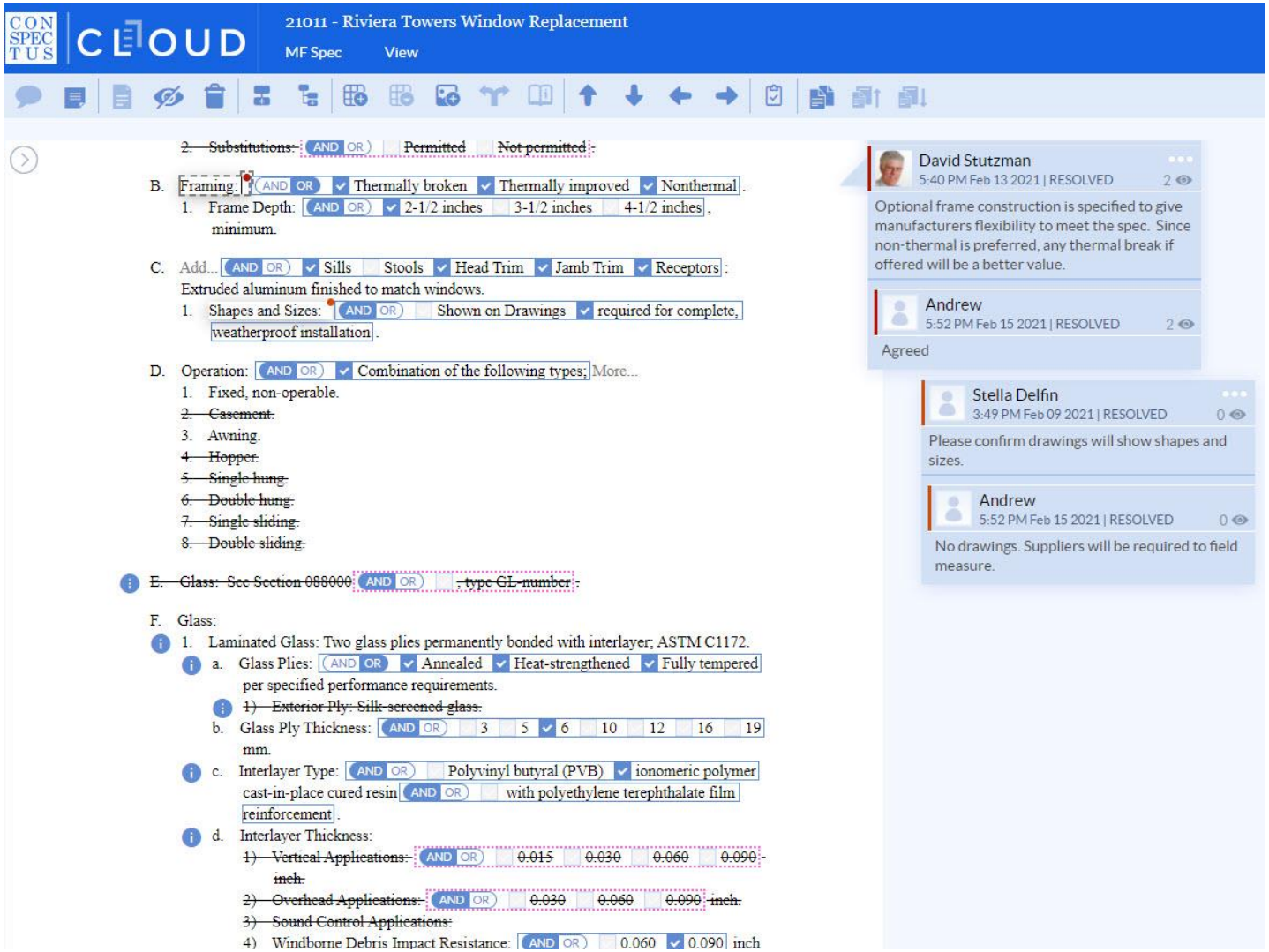
Planned Finish



Actual Finish



Drive Innovation Through Collaboration



- Facilitate design.
- Make informed decisions.
- Provide transparency.
- Transform behavior.
- Transform documents.
- Transform outcomes.

What's Next?

- Life Cycle Data Feedback
- UniFormat
- Reusable Data and Design

Thank you.

Questions?